This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims-

1. (Previously Presented) A generator for converting mechanical energy to electrical energy, the generator comprising:

at least two electrodes; and

an electroactive polymer arranged in a manner which causes a change in electric field in response to a deflection applied to a first portion of the electroactive polymer wherein an energy change resulting from the deflection of the electroactive polymer is converted to electrical energy which is removed at the two electrodes and wherein the electroactive polymer has an elastic modulus at most about 100 MPa without electrical energy applied thereto.

2. (Original) The generator of claim 1 wherein the generator is stretched before the deflection.

3. (Original) The generator of claim 2 wherein the at least two electrodes apply a voltage that produces a pressure in the polymer less than elastic restoring stresses resulting from the stretch.

4. (Original) The generator of claim 2 wherein the deflection is a contraction in one direction.

5. (Original) The generator of claim 4 wherein electrical energy is removed by the at least two electrodes during the contraction.

6. (Original) The generator of claim 1 wherein the polymer has an elastic modulus below about 100 Mpa.

7. (Original) The generator of claim 1 further comprising a mechanical input that provides the deflection and mechanical energy.

8. (Previously Presented) The generator of claim 1 wherein the electroactive polymer has a substantially constant thickness before deflection and the deflection comprises a decrease in net area of the polymer orthogonal to the thickness.

9. (Original) The generator of claim 1 wherein the polymer has a maximum linear strain of at least about 50 percent.

10. (Original) The generator of claim 9 wherein the polymer has a maximum linear strain of at least about 100 percent.

11. (Original) The generator of claim 1 wherein the polymer has a maximum area strain of at least about 100 percent.

12. (Currently Amended) The generator of claim ~~1~~ 37 wherein the pre-strain is applied to a first orthogonal direction at a pre-strain greater than pre-strain in a second orthogonal direction.

13. (Original) The generator of claim 12 wherein the pre-strain applied to the first orthogonal direction is used to enhance the change in electric field from a deflection in the second orthogonal direction.

14. (Currently Amended) The generator of claim 12 wherein the polymer is pre-strained by a factor in the range of about 1.5 times to 50 times an original area prior to pre-strain.

15. (Original) The generator of claim 1 further comprising an electric circuit electrically coupled to the at least two electrodes.

16. (Original) The generator of claim 1 wherein the polymer comprises a material selected from the group consisting of silicone elastomer, acrylic elastomer, polyurethanea copolymer comprising PVDF, and combinations thereof.

17. (Original) The generator of claim 1 wherein the polymer can support a change in electric field at most about 440 MegaVolts/meter.

18. (Original) The generator of claim 1 wherein electrical energy generated by deflection of the polymer generates at least about 0.15 Joules per gram for the polymer.

19. (Original) The generator of claim 1 wherein the generator is used in a heel strike generator.

20. (Original) The generator of claim 1 wherein one of the at least two electrodes is compliant.

21. (Previously Presented) A generator for converting mechanical energy to electrical energy, the generator comprising:

at least two electrodes; and

an electroactive polymer arranged in a manner which causes a change in electric field in response to a net area decrease of the polymer for the area orthogonal to the thickness, wherein the electroactive polymer has an elastic modulus at most about 100 MPa without electrical energy applied thereto and wherein energy released during the change in the net area decrease of the polymer is converted to electrical energy which is removed at the two electrodes.

22. (Original) The generator of claim 21 wherein the generator is stretched before the change in electric field.

23. (Original) The generator of claim 22 wherein the at least two electrodes apply a voltage that produces a pressure in the polymer less than the elastic restoring forces resulting from the stretch.

24. (Previously Presented) A generator for converting from electrical energy to mechanical energy, the generator comprising:

at least one transducer, each transducer comprising:

at least two electrodes, and

an electroactive polymer arranged in a manner which causes a change in electric field in response to a deflection applied to a first portion of the polymer; and

a frame attached to a second portion of the polymer, the frame comprising at least one aperture, wherein the first portion of the polymer is arranged in a manner which causes a change in electric field in response to a deflection applied to a third portion of the polymer.

25. (Original) The generator of claim 24 wherein the transducer is stretched before deflection of the third portion of the polymer.

26. (Original) The generator of claim 25 wherein the at least two electrodes apply a voltage that produces a pressure in the polymer less than elastic restoring stresses resulting from the stretch.

27. (Original) The generator of claim 26 further including a bias pressure.

28. (Previously Presented) A generator for converting mechanical energy in a first direction into electrical energy, the generator comprising:

at least one transducer, each transducer comprising:

at least two electrodes, and

an electroactive polymer arranged in a manner which causes a change in electric field in response to a deflection in the first direction; and

a flexible frame coupled to the polymer, the frame providing improved conversion from mechanical to electrical energy for the at least one transducer.

29. (Original) The generator of claim 28 wherein the transducer is stretched before the change in electric field.

30. (Original) The generator of claim 28 wherein the at least two electrodes apply a voltage that produces a pressure in the polymer less than the elastic restoring stresses resulting from the stretch.

31. (Original) The generator of claim 28 wherein the polymer comprises pre-strain.

32. (Original) The generator of claim 31 wherein the polymer comprises pre-strain in a second direction which improves energy conversion in the first direction.

33. (Previously Presented) A generator for converting mechanical energy in a first direction into electrical energy, the generator comprising:

at least one transducer, each transducer comprising:

at least two electrodes, and

an electroactive polymer arranged in a manner which causes a change in electric field in response to a deflection in the first direction wherein an energy change resulting from the deflection of the electroactive polymer is converted to electrical energy which is removed at the two electrodes and wherein the electroactive polymer has an elastic modulus at most about 100 MPa without electrical energy applied thereto; and

at least one stiff member coupled to the at least one transducer, the at least one stiff member substantially preventing displacement in a second direction.

34. (Original) The generator of claim 33 wherein the polymer has a compliance in one direction greater than in a second.

35. (Original) The generator of claim 33 wherein the polymer has an aspect ratio of at least 4:1.

36. (Original) The generator of claim 33 wherein the at least one stiff member is coupled to an edge of the polymer.

37. (Previously presented) A generator for converting mechanical energy to electrical energy, the generator comprising:

at least two electrodes; and

an electroactive polymer arranged in a manner which causes a change in electric field in response to a deflection applied to a first portion of the electroactive polymer, wherein, prior to the deflection an initial area of the electroactive polymer is elastically pre-strained by a factor in the range of about 1.5 times to 50 times the initial area to improve the performance of the generator when the deflection is applied.